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EXAMINER	
WOLDEKIDAN, HIBRET ASNAKE	

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,640	PEGG, STEVEN IAN	
	Examiner	Art Unit	
	Hibret A. Woldekidan	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/03/09* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/30/09,01/20/10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Response to Arguments

1. Examiner acknowledges receipt of Applicant's Amendments, remarks, arguments received on 12/03/09. Applicant's arguments have been fully considered but they are not persuasive.

Applicant's Arguments and Examiner's Answers

Applicant Argument I

1. Applicant argued on Page 7 Paragraph 1 of the Remark, "...Sugaya neither teaches nor suggests such a reflective structure..."

Examiner Answer

Examiner respectfully disagree because as clearly shown in fig. 10 the wavelength coupler(18) of Sugaya reflects the supervisory channel(λ_{OSC}) to the supervisory circuit (20) while it pass through the main signal to the amplifying unit(16). Therefore the argued feature is not persuasive.

Applicant Argument II

2. Applicant argued on Page 7 Paragraph 3 of the Remark, "...*There is nothing in Sugaya that mentions that the couplers are reflective structures, or that they comprise a merged demultiplexer and multiplexer....*"

Examiner Answer

Examiner respectfully disagree because as clearly shown in fig. 10 the wavelength coupler(18) of Sugaya receives a multiplexed wavelength band which includes a

supervisory optical signal and a main signals where the supervisory main signal has a different wavelength than the main signal(See Col. 7 line 64-Col. 8 line 3). As shown in fig. 10 the wavelength coupler(18) pass through the main signals to the amplifying unit(16) while it reflects the supervisory channel wavelength(λ_{OSC}) to the supervisory circuit (20). This clearly shows that the wavelength coupler(18) is a reflective device. Further, the incoming main signals and the supervisory signal have different wavelengths(See Col. 7 line 64-Col. 8 line 3) and the wavelength couplers(18,22) extracts and recombines the main signals and the supervisory signal(λosc) (See Col. 8 lines 53-61, fig. 10). Therefore the wavelength couplers(18,22) can be considered as a merging wavelength selective demultiplexing and multiplexing structure(18,2). **Hens the argued feature,** "*...There is nothing in Sugaya that mentions that the couplers are reflective structures, or that they comprise a merged demultiplexer and multiplexer....*", is not persuasive.

Applicant Argument III

3. Applicant argued on Page 7 Paragraph 3 of the Remark, "...nothing in Sugaya appears to teach or suggest the plurality of gates recited in claim 9....."

Examiner Answer

Examiner respectfully disagrees because gate is a broad term any point where a signal enter or exit a device can be considered as a gate. Claim 9 states, "...a first gate receiving the incoming wavelength-multiplex signal from the pre-amplifier,
a second gate outputting the supervisory channel to an amplifier,
a third gate receiving the supervisory channel from the amplifier,

and a fourth gate outputting the outgoing optical wavelength-multiplex signal;... Sugaya similarly illustrates in fig. 10, a first gate(30A) receiving the incoming wavelength-multiplex signal from the pre-amplifier(50), a second gate outputting the supervisory channel(λosc) to the OSC unit(20) located between the wavelength coupler(18) and the OSC unit(20), a third gate for outputting the supervisor signal from the OSC regenerating unit(20), and a fourth gate outputting the outgoing optical wavelength-multiplex signal a fourth gate for outputting the multiplexed main signal and OSC signal from the wavelength coupler(22). Therefore the gates recited in claim 9, reads on Sugaya and the argued feature, "*...nothing in Sugaya appears to teach or suggest the plurality of gates recited in claim 9.....*" is not persuasive.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Reference 30 in fig. 5. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) is required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective

action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 9,12,15,18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. (6292289)

Considering claim 9 Sugaya discloses an amplifier node for an optical network**(See Col. 7 lines Col. 12 lines 33-41, fig. 10 i.e. an optical repeater(8) in an optical network)** comprising: at least one input port receiving an incoming optical wavelength-multiplex signal**(See Col. 7 lines 45-50, fig. 10 i.e. the optical repeater(8) receiving wdm signal from the first terminal device(2))**; a pre-amplifier receiving the incoming optical wavelength-multiplex signal**(See Col. 12 lines 37-41, fig. 10 i.e. the optical repeater(8) has a pre-amplifier(50) receiving the incoming wdm signal from the first terminal(2))**; a continuous, wavelength-selectively reflective structure comprising a merged demultiplexer and multiplexer**(As stated Paragraph 34 of the current application, the wavelength selective structure is a combination of a multiplexing and a demultiplexing unit which splits of the supervisory channel(OSC) processes the supervisory channel and recombine the supervisory channel to the main signal.**

Similarly, Sugaya discloses(See Col. 8 lines 53-61, fig. 10) an extracting and combining couplers(18,22) having the ability of extracting the supervisory channel(λosc) from the main signal at coupler(18) and recombine the main signal with the OSC channel(λosc) at the combining coupler(22). Therefore the couplers(18,22) are considered as a merging wavelength selective structure(18,2) for selectively directing the OSC channel(λosc) to the OSC regenerating unit(20) while the main signal bypasses the OSC unit(20)), wherein the demultiplexer is configured to split the amplified incoming optical wavelength-multiplex signal at least into payload channels and a supervisory channel**(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a wavelength selective structure(18) for splitting the amplified incoming signals into supervisor signal(λosc) and main signal)**, and the multiplexer is configured to assemble the payload channels and the supervisory channel into an outgoing optical wavelength-multiplex signal**(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a multiplexing structure(22) is configured to multiplex the supervisor signal(λosc) from the OSC unit(20) and the main signal)**, the continuous, wavelength-selectively reflective structure including a first gate receiving the incoming wavelength-multiplex signal from the pre-amplifier **(See fig. 10 i.e. the wavelength selective structure(18) has a first gate(30A) for receiving the amplified signal from the preamplifier(50))**, a second gate outputting the supervisory channel to an amplifier**(See fig. 10 i.e. a second gate for outputting the supervisor signal(λosc) to the OSC unit(20))**, a third gate receiving the supervisory channel from the amplifier**(See fig. 10 i.e. a third gate for outputting the supervisor signal from**

the OSC regenerating unit(20)), and a fourth gate outputting the outgoing optical wavelength-multiplex signal**(See fig. 10 i.e. a fourth gate for outputting the multiplexed main signal and OSC signal from the multiplexing unit(22))**; and a post-amplifier receiving a dispersion compensated outgoing optical wavelength-multiplex signal and transmitting an amplified dispersion compensated outgoing optical wavelength-multiplex signal **(See Col. 12 lines 45-54,fig. 10,14 i.e. a post amplifier(52) connected to the output port for receiving dispersion compensated multiplexed signals and amplifying the received signals)**; wherein the continuous, wavelength-selectively reflective structure is adapted to split off and to insert as the supervisory channel a wavelength**(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10,14 i.e. a wavelength selective structure(18) for splitting off the supervisory channel (λosc) from the main signal and a multiplexing unit(22) for inserting back the supervisory channel (λosc) to the main signal)**, the attenuation of which between the input port and the amplifier is substantially the same in a pumped state and an unpumped state of the pre-amplifier and post-amplifier**(See Col. 4 lines 56-62, Col. 20 lines 14-18, fig. 10,14 i.e. the supervisory signal is processed in relation to the first or to the second amplifier to prevent signal degradation of the first and the second amplifiers can be prevented. Further (See Col. 20 lines 14-18) fig.14)there is an attenuation controller(216) provided in the amplifying unit(16)for keeping the attenuation level of the amplified WDM signals constant in any state).**

Sugaya discloses a dispersion compensator receiving the outgoing optical wavelength-multiplex signal **(See Col. 19 lines 1-4, fig. 14,10 i.e. a dispersion compensating fiber(DCF) for compensating dispersion created in the optical fiber(6)).**

Sugaya does not specifically disclose the dispersion compensator (DCF) located after the multiplexing unit (22) for receiving the outgoing wdm signals. However since the purpose of the dispersion compensator is to compensate the dispersion created on fiber(6), it would be a matter of design choice to locate the DCF after the multiplexing unit(22)).

Sugaya does not explicitly disclose the attenuation of which between the input port and the amplifier is substantially the same in a pumped state and an unpumped state of the pre-amplifier and post-amplifier.

However Sugaya discloses the supervisory signal is processed in relation to the first or to the second amplifier to prevent signal degradation of the first and the second amplifiers**(See Col. 4 lines 56-62**). Further, there is an attenuation controller automatic output level controller which is the automatic output level control unit**(ALC 254 of fig. 14)** to control the variable attenuator(216) so that the attenuation level of the amplified WDM signals can be kept constant any state**(Col. 19 lines 39-43, Col. 20 lines 3-18, fig. 10,14).** Therefore, since the automatic output level control unit keeps the output power constant in any state, it would have been obvious to one of ordinary skilled in the art to consider the attenuation of which between the input port and the amplifier is

substantially the same in a pumped state and an unpumped state of the pre-amplifier and post-amplifier.

Considering Claim 12 Sugaya discloses the amplifier node of claim 9 wherein the amplifier comprises an active medium in series with a leveling filter to level a gain of the active medium in the wavelength band of the payload channels, and wherein the leveling filter is transparent for the supervisory channel **(Col. 19 lines 39-43 and lines 60-67, fig. 14 i.e. automatic output level control circuit(ALC)(254) controllers the attenuation level in the attenuator(216) so that the power output from the amplifying unit(16) to be constant. Further, the ALC in communication to the OSC unit(20) for receiving and sending a control signal, this shows that the ALC unit is transparent to the OSC)**.

Considering claim 15 Sugaya discloses an optical network, comprising: an optical fiber to transmit an optical wavelength-multiplex signal comprising payload channels and a supervisory channel**(See Col. 7 lines 47-58, fig. 10 i.e. an optical fiber(6) for transmitting wavelength-multiplex main signals and supervisory signals)**; a transmitter node comprising: at least one input port receiving an incoming optical wavelength-multiplex signal**(See Col. 7 lines 45-50, fig. 10 i.e. the optical repeater(8) receiving wdm signal from the first terminal device(2))**; a pre-amplifier receiving the incoming optical wavelength-multiplex signal**(See Col. 12 lines 37-41, fig. 10 i.e. the optical repeater(8) has a pre-amplifier(50) receiving the incoming wdm signal from the first terminal(2))**; a continuous, wavelength-selectively reflective structure comprising a merged demultiplexer and multiplexer**(As stated Paragraph 34 of the**

current application, the wavelength selective structure is a combination of a multiplexing and a demultiplexing unit which splits of the supervisory channel(OSC) processes the supervisory channel and recombine the supervisory channel to the main signal.

Similarly, Sugaya discloses(See Col. 8 lines 53-61, fig. 10) an extracting and combining couplers(18,22) having the ability of extracting the supervisory channel(λosc) from the main signal at coupler(18) and recombine the main signal with the OSC channel(λosc) at the combining coupler(22). Therefore the couplers(18,22) are considered as a merging wavelength selective structure(18,2) for selectively directing the OSC channel(λosc) to the OSC regenerating unit(20) while the main signal bypasses the OSC unit(20)), wherein the demultiplexer is configured to split the amplified incoming optical wavelength-multiplex signal at least into payload channels and a supervisory channel**(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a wavelength selective structure(18) for splitting the amplified incoming signals into supervisor signal(λosc) and main signal)**, and the multiplexer is configured to assemble the payload channels and the supervisory channel into an outgoing optical wavelength-multiplex signal**(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a multiplexing structure(22) is configured to multiplex the supervisor signal(λosc) from the OSC unit(20) and the main signal)**, the continuous, wavelength-selectively reflective structure including a first gate receiving the incoming wavelength-multiplex signal from the pre-amplifier**(See fig. 10 i.e. the wavelength selective structure(18) has a first gate(30A) for receiving the amplified**

signal from the preamplifier(50)), a second gate outputting the supervisory channel to an amplifier**(See fig. 10 i.e. a second gate for outputting the supervisor signal(λosc) to the OSC unit(20))**, a third gate receiving the supervisory channel from the amplifier, and a fourth gate outputting the outgoing optical wavelength-multiplex signal**(See fig. 10 i.e. a third gate for outputting the supervisor signal from the OSC regenerating unit(20))**; a post-amplifier outputting the outgoing optical wavelength-multiplex signal onto the optical fiber; and a dispersion compensator interposed between the continuous, wavelength-selectively reflective and the post-amplifier**(See Col. 12 lines 45-54,fig. 14 i.e. a dispersion compensating fiber(DCF(218)) interposed between the wavelength selective structure(18) and the post amplifier(52))**; and a receiver node to receive the optical wavelength-multiplex signal from the transmitter node**(See fig. 4 i.e. two repeater nodes(8) connected in series. The second repeater node receives the wdm signals outputted from the first node through terminal(32c))**, the receiver node**(See fig. 9 i.e. the second repeater node comprises another repeater node(8)))** comprising: a second demultiplexer configured to split the optical wavelength-multiplex signal into the supervisory channel and the payload channels**(See Col. 8 lines 53-61fig. 4 i.e. a second demultiplexer(18) for demultiplexing the wdm main and signal supervisory signal)**; and a sink for the supervisory channel**(See Col. 8 lines 53-61 fig. 4 i.e. OSC circuitry(20) for receiving the supervisory channel from the demultiplexer (18))**; wherein the multiplexer and demultiplexer are adapted to insert and extract, respectively, as the supervisory channel, a wavelength into/from the optical

wavelength-multiplex signal **(See Col. 8 lines 53-61fig. 4 i.e. the demultiplexing unit(18) and the multiplexing(22) are adapted to extract and insert respectively the incoming OSC channel to the main wdm signals)**.

Sugaya does not explicitly disclose the attenuation of which between the amplifier and the sink is substantially the same in pumped and unpumped states of the pre-amplifier and the post-amplifier.

However Sugaya discloses the supervisory signal is processed in relation to the first or to the second amplifier to prevent signal degradation of the first and the second amplifiers**(See Col. 4 lines 56-62**). Further, there is an attenuation controller automatic output level controller which is the automatic output level control unit**(ALC 254 of fig. 14)** to control the variable attenuator(216) so that the attenuation level of the amplified WDM signals can be kept constant any state**(Col. 19 lines 39-43, Col. 20 lines 3-18, fig. 10,14).** Therefore, since the automatic output level control unit keeps the output power constant in any state, it would have been obvious to one of ordinary skilled in the art to consider the attenuation of which between the amplifier and the sink or the OSC circuitry is substantially the same in pumped and unpumped states of the pre-amplifier and the post-amplifier.

Claim 18 is rejected for the same reason as in claim 12.

3. Claims 10,11,13,14,16,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. (6292289) in view of Peragine (US 6,623,185)

Considering claim 10 Sugaya discloses the amplifier node of claim 9 wherein the amplifier comprises an erbium-doped fiber amplifier**(See Col. 9 lines 50-55, fig. 5,10 i.e. the optical amplifier in the node is EDFA(16))**,

Sugaya further discloses the wavelength of the supervisory channel is between in the 1510 rang**(See Col. 8 lines 1-5)**.

Sugaya does not specifically disclose the wavelength of the supervisory channel is between about 1600 and 1650 nm.

Peragine teaches the wavelength of the supervisory channel(OSC) is between about 1600 and 1650 nm**(See Col. See Col. 1 lines 36-42 i.e. the OSC having a wavelength range of 1610-16200 nm)**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Sugaya, and have the wavelength of the supervisory channel(OSC) to be between about 1600 and 1650 nm, as taught by Peragine, thus providing an efficient transmission system by providing the supervisory signal to be transmitted at a different transmission wavelength range than the main signal so that the supervisory signal and the main signal can be easily differentiate by their wavelength and modification can also be made in either of the main signal or the supervisory signals based on their wavelength.

Considering Claim 11 Peragine teaches the amplifier node of claim 10 wherein the wavelength of the supervisory channel is between about 1610 and 1650 nm**(See Col. See Col. 1 lines 36-42 i.e. the OSC having a wavelength range of 1610-16200 nm)**.

Considering Claim 13 Sugaya discloses the amplifier node of claim 11 wherein the active medium is placed before the filter in the amplifier**(See fig. 14 i.e. the active medium(208) is placed before the variable attenuator(216))**.

Considering Claim 14 Sugaya discloses the amplifier node of claim 11, wherein the active medium is placed behind the filter in the amplifier**(See fig. 14 i.e. the active medium(208) is placed behind the variable attenuator(216))**.

Claim 16 is rejected for the same reason as in claim 10.

Claim 17 is rejected for the same reason as in claim 11.

Conclusions

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Xu et al. (US 6,381,049) reads on limitations of claim 9,15. As discussed in **Col. 5 lines 7-22 and illustrated in fig. 6a,** of Xu, a wavelength selective reflective structure(140) has four ports(P1,P2,P3,P4). The first port(P1), receives wavelength multiplexed signals(K1,K2,K3,...) and the wavelength selective reflective structure(140) has a filtering unit(F2) that selectively reflects wavelength through port 3 to the attanuation unit(R1). After the reflected wavelength(K2) processed using the attenuation unit(R2), it routed back to the rest of the wavelengths through port 4. The processed wavelength(K2-att) and the rest of the wavelength combined and outputted through port 2 as wdm signals(K1, K2-att, K3,..). Further in **fig. 7**, the attenuating structure(R1 of fig. 6) that process the reflected wavelength is replaced with an amplifier A1 of fig. 7.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hibret A. Woldekidan whose telephone number is (571)270-5145. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 5712723078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. A. W./
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613